ELECTRICITY ON THE FARM *Magazine*

FEBRUARY, 1946

Quality Milk Calls for Water Heaters and Coolers . . . Winter Water for Hens . . . Blower Mows Away Hay . . . Stokers Cure Tobacco Better . . . Improved Home Lighting . . . New Range for the Cook . . . What's New?

19th Year . . . . . No. 2

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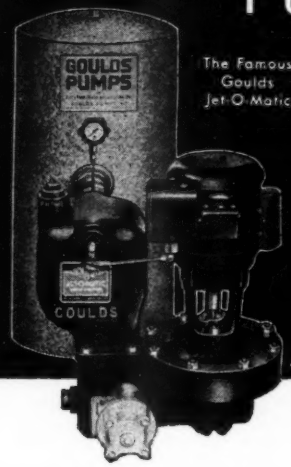

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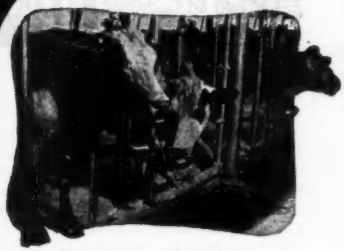

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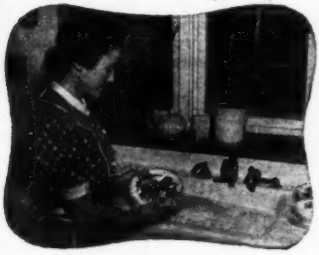

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Editor's Chat

SAFETY

Last year ELECTRICITY ON THE FARM won the National Safety Council "Award of Honor for Distinguished Service to Safety." The award was open to all farm magazines of national circulation. We are proud of that honor. We are particularly pleased because every article we published on Safety was printed to help our readers and without thought of any contest.

Agriculture is a hazardous occupation. It could be made safer if we think about safety—or just think, and eliminate carelessness.

The National Safety Council is to be commended for concerning itself with saving life, limb and property of farmers. Because of the Council's efforts, attention is being focused on farm safety and how to accomplish it. We believe your happiness and ability to enjoy electric service is dependent on keeping your arms and legs and lives; so we will continue to stress safety.

PADDLE HIS CORPUS ARREARUS

The present labor situation (Jan. 14) is of concern to all of us. We want new automobiles and washing machines and we don't want runaway inflation which will destroy the value of our savings, our War Bonds and insurance. The situation tends to become befuddled; but some things we know. We know that the cost of living has gone up sharply; we know our Government is in debt about $262,000,000,000; we know that the high wartime wages of labor and overtime pay has contributed to these; we know that labor has much more to spend than before the war; we know that *some* labor groups encouraged by government support of compulsory membership and the "check-off" have become insolent and arrogant; and have a "public be damned" attitude. If you don't think labor has profited, ask some GI who fought for $50 a month in "the bulge" or on Iwo Jima. We also know that labor has more votes than manufacturers and that our elected officials are not ignorant of this fact. The thing that we forget is that these pressure groups with dictatorial complexes make a big noise, but do not constitute a majority of the voters. There are more bank and office clerks, workers in hardware and grocery stores, garages and small factories, owners of small businesses, teachers, preachers, old people retired on savings, than all the pressure "OR ELSERS" put together. When one group forces its demands, the rest of us pay the bill. Perhaps we should tell our congressmen and President that we also vote, pay taxes and work for a living. The automobile strike may be settled when you read this; but the seeds of selfishness and dictation are still growing.

Farmers are both manufacturers and laborers and have tasted government dictation and regulation. They should be able to appraise the labor demands. Let's apply it to the farm. If organized farm labor was striking instead of auto and steel workers, here's what you would have.

You would be paying a contract union wage for limited hours to your farm hands. You would also be paying for them to the Industrial Accident fund, the Social Security fund and paying part of their wages to the union as dues even though *your* hired men do not want to belong to the union. Then the hired man's union bosses, knowing that the public needs wheat, milk and eggs, decides this is the time to strike for a pay increase. They demand 30 percent increase, *or else*. Your men are forced to strike. Pickets pace between your house and barn, hen house and machine shed and refuse to let you or your wife or the kids go out to feed the hens or milk the cows. Your customers in town go without milk and eggs. The hired men do not offer to do any more work for the 30 percent, and when you refuse to pay, they demand that they and the Government look over your books and your plans and hopes for the future and tell you how you should run your business and what wages you must pay. One more step toward socialism and dictatorship—nasty little selfish pressure-group dictatorships.

A sad part of it all is that many, perhaps more than 50 percent of the strikers, are reasonable men and may not wish to strike. They are virtually coerced through false propaganda and intimidation.

There are some good labor unions that give as well as take. They are good for labor, good for the public and do not destroy the opportunities for capital. But these bad boys who have hogged the manger and been fed candy until they thumb their noses at the rest of the family and demand 30 percent OR ELSE—. Well, if we must have a papa in Washington, it is high time that we have a papa President or papa Congress with guts enough to turn that brazen brat of a brother over his knee and apply the slipper to his corpus arrearus before he goes out and breaks his own neck and wrecks us all.

Geo. W. Kable

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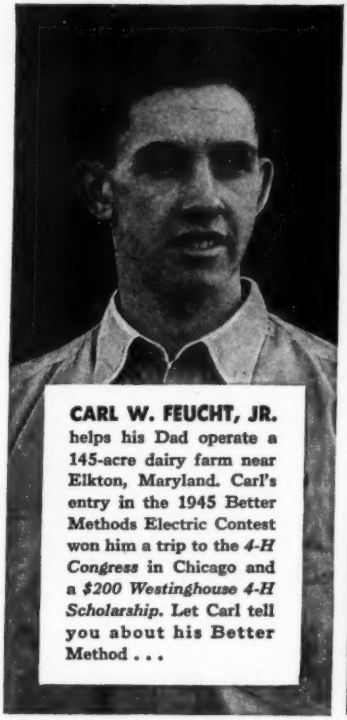
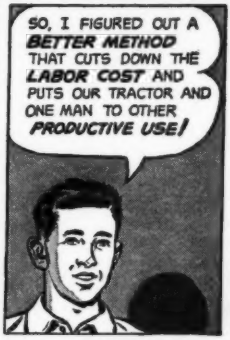
CARL W. FEUCHT, JR. ... Scholarship Winner in the 1945 BETTER METHODS ELECTRIC CONTEST!

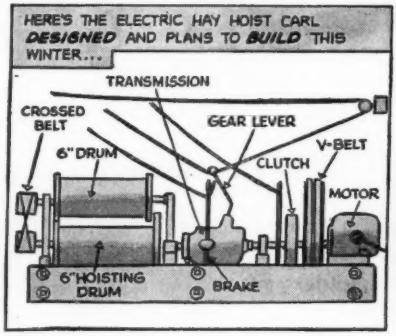


CARL W. FEUCHT, JR. helps his Dad operate a 145-acre dairy farm near Elkton, Maryland. Carl's entry in the 1945 Better Methods Electric Contest won him a trip to the *4-H Congress* in Chicago and a *$200 Westinghouse 4-H Scholarship.* Let Carl tell you about his Better Method . . .

WE NOW NEED 4 MEN TO GET OUR HAY CROP INTO THE BARN — 2 TO MAN THE TRACTOR AND HAY FORK AND 2 TO WORK IN THE MOW. TO LOAD AND UNLOAD 104 TONS OF HAY TAKES 313 MAN-HOURS OF LABOR — COSTING ABOUT $250.



AN ELECTRIC HAY HOIST WOULD ELIMINATE THE NEED FOR A MAN AND THE TRACTOR. THAT CERTAINLY WOULD BE A BETTER METHOD TO SAVE MONEY!



AND HERE'S THE PROPOSAL CARL SUBMITTED TO HIS PARENTS...
I PLAN TO BUILD AN ELECTRIC HAY HOIST FOR ABOUT $165. IT WILL SAVE US $102 A SEASON IN HAYING EXPENSE AND PAY FOR ITSELF IN LESS THAN TWO HARVESTS.
LOOKS GOOD TO ME, SON. LET'S DO IT!

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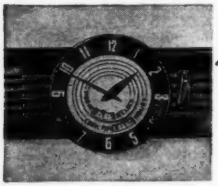

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ELECTRICITY ON THE FARM Magazine

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High Quality Milk Calls for Water Heaters and Coolers

By L. H. HILL

Editor's Note. Mr. Hill is with the Twin Cities (Minneapolis and St. Paul) Milk Producers Association. This paper was presented by him recently at a meeting of the Rural Electric Equipment Council of the North Central Electrical Industries. This organization is made up of representatives of manufacturers, distributors, dealers, power companies, REA co-ops, and the University of Minnesota. It works to help farmers to get the greatest satisfaction possible from their use of electricity.

WITH the return of peace, quality has become the shibboleth of the milk industry. The Federal and State Governments are becoming more and more critical as to how milk is produced and marketed. City Health Departments all over the country are adopting the U. S. Standard Milk Ordinance as a model.

Incentive Payment Plan

The Twin City Milk Producers last May adopted a new Quality Paying Plan which gives a producer a premium if his milk on all tests in the month is of high quality. Medium quality milk, for which the shipper was formerly paid full price, now returns 12c a hundred less than high quality milk.

The initiation of this new Quality Plan has made a large percentage of our members quality-minded over night. It has made them see that by building a good milk house, installing a water heater and providing a good year-round cooling tank, they can produce better milk with less effort than before and receive the premium price every month. On the average the extra price received will pay for this new house and equipment in two years time.

Causes of Bacteria

There are two fundamental factors in production of low bacteria milk:

1. Cleaning of utensils to make them as near bacteria free as possible.
2. Cooling the milk quickly and to a low temperature to inhibit the multiplication of these bacteria which have gained access from the cow, dust and utensils.

Cleaning comes first because of all the sources of bacteria in milk, dirty utensils introduce the most, especially poorly cleaned milking machines.

Washing of milk utensils need not be a hard job if done regularly and immediately after milking. But like washing dishes in the house, they take hot water. Nothing can take the place of hot water in milk sanitation. Along with a good soapless cleaner, it removes the casein and fat, then sanitizes. A bachelor washes his dishes in cold water, but we are pretty well married to the dairy business and must outgrow these careless bachelor practices.

Water Heaters

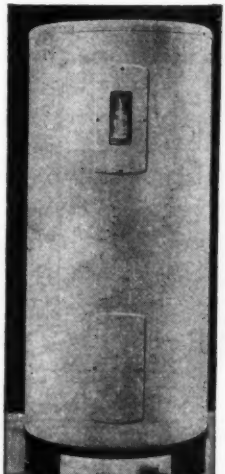
Cities operating under the Standard Milk Ordinance require water heating equipment in every milk house. Minneapolis requires hot water equipment where a shipper has had trouble with bacteria counts. The Twin City Milk Producer's Quality Service Department, while acting only in an advisory or helpful capacity to its members, does not hesitate to tell the producer that a water heater is a "must" if he expects to produce the premium grade regularly and easily. Our records show that members with easy access to hot water have no trouble.

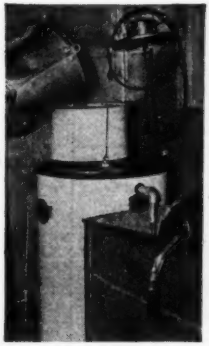
We like the insulated electric heater best because 6 to 10 gallons of hot water are available when the dairyman wants it; and, because it is always available, he will not put off the job of cleaning. Most producers report a cost of about $1.50 per month for 10 gallon heaters.

Artificial Cooling Tanks

Some shippers have had the idea that they could get along without

. . . . . (More on page 21)





Center: This is a 10 gallon, pour-in type heater which has become popular in dairies. It is always full of hot water, thermostatically controlled. **Right:** A 10 gallon gravity type electric heater. Fill it up with hose or bucket. The thermostat turns off the heat when the water is hot.

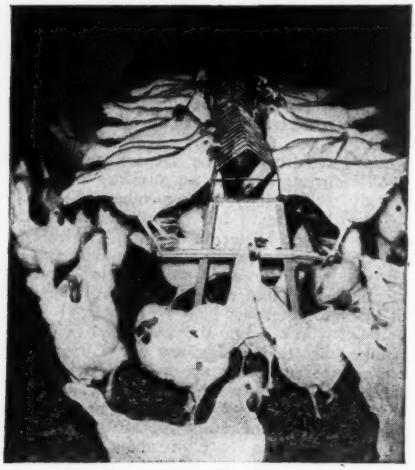
Above: A typical pressure type, plumbed-in water heater for house or dairy. Also thermostatically controlled and with the water under pressure. Made in sizes from 10 to over 100 gallons.

Winter Water for Hens

Electric Heating Cable Attached to Pipes and Valves Insures Automatically Flowing Water During Winter Cold Spells. How Much Cable; How to Attach It and Control the Temperature.

By C. N. TURNER*

WATER available to hens at all times at the proper temperature is essential for maximum egg production. Many hours and many unnecessary steps can be saved by having an automatic water supply in the poultry house in winter as well as summer.



Hens show their appreciation of water by keeping up production.

Walter Schait of Dryden, New York, had a pressure watering system which was adequate in the summer, but when cold weather set in he had to drain all of his supply lines, and even then he had an occasional "freeze-up" which caused him extra labor and expense.

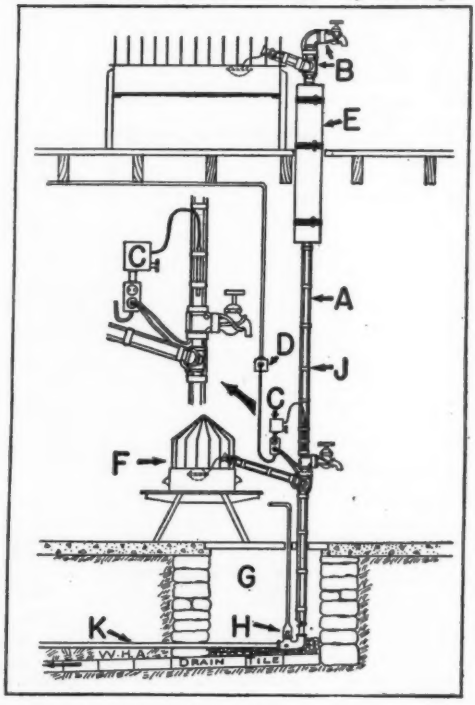
Heating Cable Protects Pipes

Last year the New York Farm Electrification Council selected Mr. Schait's laying house as a place to investigate the use of lead-covered electric heating cable in protecting poultry watering systems from freezing. We installed 370 feet of soil-heating cable along 185 feet of water pipe and looped it around some 20 automatic float valves and faucets. Two separate systems were installed with different amounts of heat applied per foot of pipe. These heating cables were controlled by separate thermostatic switches installed in the coldest part of the house through which the pipes passed. One thermostat was similar to those used in brooders and turned the heat on and off depending on the temperature of the air in the house. The other had a metal tube which was attached to and was controlled by the temperature of the pipe. Observations were made throughout the winter to determine the amount of electricity necessary to prevent freezing. The minimum temperature recorded inside the house was 13°. Outside it was 23° below zero. Of special interest was the fact that the temperature inside the house remained below freezing continuously for more than a week. With drinking water available at 45° to 50° there was no slump in egg production.

Mr. Schait estimates that the heating cable has saved him 25 percent of his labor in caring for the flock. He is so well pleased that he has installed an additional 500 feet of cable in a new building housing his breeders. He has had many visitors from all parts of the State and from other states to see how he solved the winter watering problem.

Electric heating cable is flexible and the lead covering makes it waterproof. It can be easily attached to all parts of the water system with wire or friction tape. The accompanying drawing shows how it was used on the Schait water system. Drainage was provided at each water trough to carry away the waste water from daily cleaning and overflow.

While insulation was not used at the Schait farm, we advise putting "air cell" heating-pipe insulation around the pipe and cable assembly to conserve heat and make the installation more efficient. This insulation should have protection from the floor to a height of 2½ to 3 feet by covering it with galvanized sheet metal to keep the birds from picking it. Some poultrymen have used

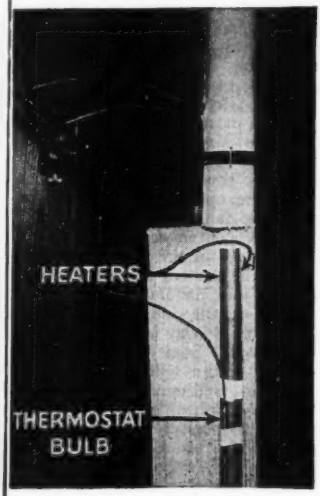


Sketch showing how the heating cables are placed to protect water piping from freezing. (A) Two heating cables attached to the sides of a water pipe with friction tape (J). (B) Cable coiled around float valve and faucet. (C) Thermostatic switch located at the coldest point on the line. (D) Electric circuit. (E) Pipe insulation containing air cells to cut down heat loss. (F) Thermostatically controlled immersion water warmers used in fountains. (G and H) Frostproof pit with stop and waste valve below frost line. (K) Water supply pipe.

*Mr. Turner is in charge of investigations for the New York Farm Electrification Council. He is in the Agricultural Engineering Dept., Cornell University, Ithaca, N. Y.

down spout filled with rock wool or shavings for insulation and protection from the hens. Others have installed a 6-inch wood box filled with insulating material. The insulation must be kept dry to be most effective.

The cable can be installed for operation on either 115- or 230-volt circuits. It is designed to use 60 feet of cable on 115 volts, which produces 400 watts of heat (6⅔ watts per foot), and 120 feet on 230 volts which provides 800 watts (6⅔ watts per foot). Shorter lengths of cable should not be used because the operating temperature will be too high for long life of the cable.



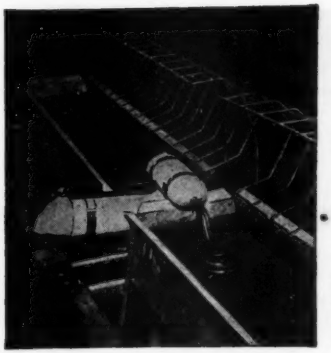
Water pipe with a section of insulation removed to show the heating cable and the thermostat bulb attached to the pipe.

Based on experiences at the Schait farm, from 4 to 6 watts for each foot of ½-inch water pipe should be sufficient to keep the water from freezing when insulation is installed around the pipe and cable assembly. Either type of thermostat is satisfactory, but the one with the bulb against the water pipe will probably save a little electricity over the type used in air.

The accompanying table gives the wattage of different lengths of cable and the watts per foot. The watts per foot of pipe will depend on whether one or two cables are attached to the pipe and whether the cable is kept straight or wound around the pipe.

Wattage of Different Lengths of Cable

Cable length	Circuit volts	Total watts	Watts per ft.
60 ft.	115	400	6⅔
75 ft.	115	320	4⅓
90 ft.	115	260	3
120 ft.	115	200	1⅔
120 ft.	230	800	6⅔
150 ft.	230	640	4⅓
180 ft.	230	520	3
240 ft.	230	400	1⅔



View of troughs with pipes, float valves and faucet covered with pipe insulation after heating wires are attached. Overflow pipes and drains are at opposite ends of the troughs.

A single line of cable at 3 watts per foot may provide sufficient heat in a well-insulated poultry house. In a cold house two lines should be attached to the pipe. Where the watts per foot is less than 3, two cables should always be attached to the pipe.

Where a number of heating cables are to be installed on one thermostat, a convenient method of doing it is to run the two feed wires from the fuse panel to the thermostatic switch located at the coldest point along the pipe. From here circuits can be carried to convenience outlets at points near where the heating cable is to start. The ends of the heating cable can be attached to a heavy-duty plug and the cable plugged in or disconnected at will. When plugged in, the current would be turned on and off in all the heating cables by the thermostat.

Heating cables are available from several manufacturers at a cost of about 7c per foot. Suitable thermostats are made by at least three companies and cost from $6 to $10.

Where heating cables are to be installed, we suggest consulting your power company for advice about the details.

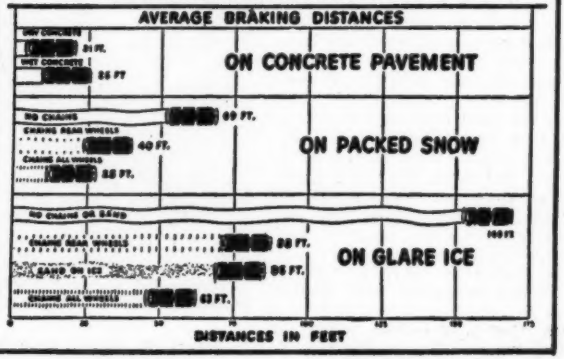
Cover Picture

The cover picture is of Mr. Ben Wennlund of LaFox, Illinois, and his labor-saving farm elevator. He and his father-in-law feed some 50,000 bushels of grain to 1,000 steers normally in a year. Most of the grain is purchased in the community, and it used to be shoveled by hand into a truck. Then he rigged up this elevator to do the shovelling. The gasoline engine on top is used where there is no electric current. Electricity is so much better than gas that the elevator is also equipped with a one-half horsepower motor to use wherever current is available.

More Chicken and Turkey

The per capita supply of chicken in 1945 was 25 pounds, as compared with 18 pounds for the 1935-39 average. More turkey is being eaten, too. In 1945 the share for each person was about 5 pounds, but in 1935-39, about 2½ pounds.

Braking Distances on Various Road Surfaces at 20 M. P. H.



Cyrus Packard, Macedon, N. Y., pitches partly cured hay into his blower. The mow is equipped with a hay curing system.

Blower Mows Away Long Hay

By PAUL R. HOFF*

BLOWERS have been used as conveyors for many materials, but it remained for a group of farmers in western New York to be the first to put long hay into the mow with a blower. The idea started several years ago with Mr. A. I. MacDuffie of Pavillion Center, New York.

One day while he was using an old threshing machine to blow combined straw into his mow, he began to wonder why he could not blow hay into the mow too. Following his hunch, he removed the blower housing, fan and wind stacker pipe from the threshing machine and set them up on a stand on the barn floor. Power to operate the blower came from his tractor, and he brought the hay to the blower with his buckrake. Not knowing how palatable the livestock might find the hay that had been mowed away with the blower, for it was somewhat broken up, Mr. MacDuffie filled only one bay of his barn that way. The rest of the hay was mowed away in the usual manner. When the hay was fed, the stock ate the blown hay as readily as they ate the other. Since then, all of his hay has gone into the mow through the blower.

The following year, several of MacDuffie's neighbors built similar hay blowers from the wind stacker parts of old threshing machines and the idea spread from there. In some neighborhoods the supply of discarded threshing machines was soon exhausted. In preparation for the 1945 hay harvest, several manufacturing companies in western New York built blowers especially for blowing long hay into the mow.

How It Works

The usual procedure is to remove the blower and the blower housing intact from the old threshing machine and to mount this assembly on skids so that the machine can be moved about. One of the commercially built blowers is equipped with a pair of wheels so that it can be trailed behind a truck or a tractor. It is necessary to build a hopper-shaped feed table in front of the fan opening so that the hay can be fed to the blower without danger of getting a pitchfork in the fan blades. Although most blowers are used with the same size and shape of feed opening as was on the old threshing machine, several users have enlarged the opening so that the hay enters the fan housing lower and to the left (nearer the blower pipe). This change in the feed opening increases the amount of hay that some blowers will handle.

Most of the blowers have been used to mow away long hay that was field cured. Some of them because of their design will not handle hay that is not well cured, but others will blow hay with as much as 30 to 35 per cent moisture into the mow. (Hay with this moisture should be put into a mow only where there is a mow curing system). Green hay tends to clog the blower pipe or to wrap around the fan blades. Blower pipe clogging occurs less often with a 14" or a 16" diameter pipe, although one owner of a commercially built blower having a 12" pipe successfully filled his mow drying system this last summer with hay that he estimated contained 35 per cent moisture. At least part of his success in putting partly cured hay through his blower was due to feeding the machine evenly. Wrapping around the fan blades seems to occur more frequently on some blowers than on others. Several users have

Blower for mowing away hay built by George Frankish, Gorham, N. Y.

*Mr. Hoff is Extension Agricultural Engineer, Cornell University, Ithaca, N. Y.

prevented wrapping by attaching a large disk from an old disk harrow to the fan hub, with the convex surface facing the feed opening.

The first men who built long hay blowers from old threshing machines had to experiment to learn the best operating speed. Best operating speed seems to be 800 to 1,000 revolutions per minute, although an occasional blower could be found running 1,100 to 1,200 rpm.

A Labor Saver

The men who are using a blower to mow away their hay and who are bringing the hay to the barn with a buckrake report that they are able to bring in hay with less labor and in less time than they were ever able to with a hay loader and a wagon or a truck. Some farmers report that they save as much as 50 per cent of the time and labor formerly used, and reports of saving a third of the time are common. The usual hay crew is only two men—one on the buckrake and the second man pitching hay into the blower. No one is needed in the mow because the hay can be well distributed by moving the stacker pipe to direct hay into every part of the mow.

Hay blower users generally agree that the physical effort involved is less than they ever thought was possible. Several factors are responsible. First, the man in the barn is working on solid footing, because he stands on the barn floor or on the ground while he is pitching hay into the blower, instead of climbing around on loose hay in the mow. Second, buckraked hay is loose, and it does not need to be torn apart to be pitched into the blower. Hay brought to the blower on a wagon is hard to pitch in, and the job goes slower; the saving in time and effort is not as great as it is with a buckrake.

Up to the present time, the blowers used to mow away long hay have been made from old threshing machine parts or have been manufactured by companies making threshing wind stackers. Generally, tractors have been used for power, but experimental work with a blower powered with a 7½ horse power electric motor indicates that as soon as a more efficient blower is designed for this job, here is another use that can be made of a portable farm electric motor.

Stokers Cure Tobacco Better

By DAVID S. WEAVER*

THE North Carolina Experiment Station, foreseeing the shortage of labor and wood for tobacco curing, began some preliminary experiments with the use of domestic coal stokers several years ago. From the first it was evident that coal stokers could be used to cure tobacco with many distinct advantages. The curing of tobacco is an art which has come down through the generations, but little science has been applied to the process. The use of the stoker has not only reduced the cost of the curing but has focused the attention of tobacco farmers on the desirability of more careful controls of temperature and humidity.

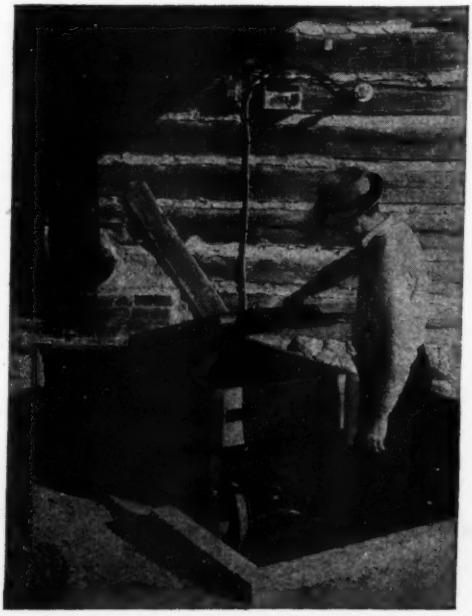
Thousands of coal stokers have been installed and almost without exception they are bringing great satisfaction to tobacco farmers. The very high labor requirement during the tobacco harvesting and curing season makes it mandatory that all the time possible be conserved. With a stoker it is not necessary for a man to remain at the barn all night as the automatic control will keep the desired temperature without further attention.

Study of hundreds of stokers has revealed some common faults in their use. First, the installation of too large capacity stokers. Second, the improper design of the furnace for stoker use. Third, insufficient flue area for proper regulation of the draft. It was found through experiment and in practice that a thirty-pound-per-hour stoker will do a much better job of curing in most barns than oversize stokers. In addition to small capacity, a tobacco barn stoker should have two or three speeds of coal feed, a long feed screw, and an accessible clean-out box.

Some change in design of the furnace is necessary but in general a stoker can be installed in furnaces now in use. However, in building a new furnace for a stoker advantage should be taken of an improved design worked out by the Department of Agricultural Engineering at Raleigh, N. C.

The best control for curing tobacco is a simple time clock that has a cycle of fifteen minutes and is capable of operating the stoker as much as ten minutes out of the fifteen. This control has the following advantages over anything yet used: First. Excellent control of the fire during the period when the tobacco is yellowing. Second. An automatic rise of temperature as the leaf dries, thus requiring less attention. Third. An even drying rate night and day. Fourth. It is the least expensive and most dependable of all the control systems used.

Electric stokers are helping to produce better grades of flue-cured tobacco and are doing it in a labor-saving way that pleases the tobacco farmer.



This is one type of stoker used in tobacco curing barns. The automatic time control is mounted above the stoker on the barn.

*Mr. Weaver is head of the Department of Agricultural Engineering, North Carolina State College, Raleigh, N. C.

Electrical Housekeeping

Edited by **GAIL MEREDITH**

Laundry Layouts

By **MARGARET DAVIDSON**

FOR the average home it is hard to justify the expense of building and equipping a room that is used but two or three times a week. For those who are loath to plan a separate laundry room with highly specialized use, one many-use utility room is often a workable suggestion. The possibilities for such a room are legion—they depend on the family needs or desires. In some parts of the country, where basementless homes are common, the utility room that houses the furnace and water heater can also include the laundry layout. There is a very real advantage in such a plan, for the water heater is strategically placed close to the washing machine for efficient use of hot water. These utility rooms often have generous storage for cleaning equipment and the children's outdoor wraps and bulky playthings like tricycles, sleds and wagons.

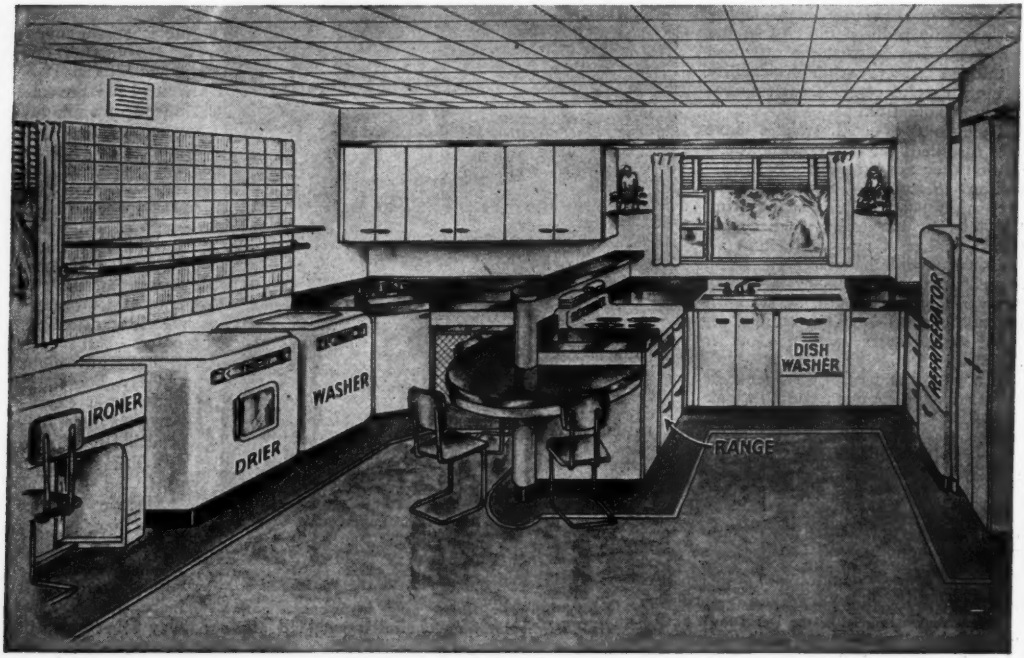
Activities Room Desirable

Oftentimes homemakers are delighted with the idea of a service room that provides space for some of the extra activities that seem to be forgotten in planning most homes. For example, a sewing-laundry room is a natural. Mending is a preliminary to washing and furthermore every good seamstress uses an iron frequently as she works. Then, too, with such an arrangement, the inevitable disarray that is part of any sewing job, is not spread over the living portion of the house.

In some homes, a modern style pantry fits in nicely with the service room idea. Many of tomorrow's homes will feature home freezers, which will offer far more in service and convenience if they are nearby the kitchen rather than relegated to the basement.

For some families a hobby center belongs in the general scheme of things. Amateur photographers, scrapbook makers, gardeners and all manner of hobby-minded folks appreciate a place for their busy work that is away from the living quarters of the house. There could be no better place for such activities than the laundry service room. With running water near at hand, and a workmanship like space in which to expand, the hobbyist is in his element—unhampered by the fear of marring furuiture or floor.

Mothers of young children welcome a place where youngsters can play without being continually underfoot, and without cluttering up the rest of the house. Again, the laundry service room offers space of a suitable sort to take the rough and



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Fast!...Low Cost!...Big Oven! ...Clean!...Safe!...Sure Results! These advantages, in fullest measure, are Frigidaire's contributions to the ease and enjoyment of electric cooking. And they are in addition to all the exciting new features, all the outstanding conveniences that mark Frigidaire's long record for lasting satisfaction, unsurpassed value . . . a record for dependability established by Frigidaire appliances in millions of kitchens the world over.

Only Frigidaire has Radiantube Cooking Units! Heat fast, save current! Unique design guards against heat waste, insures maximum contact with utensils. Long lasting, ruggedly built. Spill-overs can't hurt them. Easy to clean.

This Combination of features makes Frigidaire an ideal electric range for the farm home. Roasts and bakes evenly. Oversize oven bakes six 1½ pound loaves of bread at once—special models have *two* ovens. Big Thermizer Cooker for cooking soups, stews, boiled dinners—preparing entire meals. Cook-Master control turns heat on and off automatically. Waist-high broiler. Extra-thick insulation saves current. Cabinet porcelained inside and out for easy cleaning.

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tumble of children's play.

So it is—there are many possibilities for service rooms which include laundry layouts plus space for other activities. These extra uses for the room help pay the rent and justify a first floor laundry location. After all, modern laundry equipment is attractive appearing and very fittingly displayed in a first floor service room.

Kitchen-Laundry Combination Has Modern Appeal

To some women, a kitchen-laundry combination is appealing. The new automatic washing machine lends itself particularly well to this idea. The washer can be placed in a strategic location—but should not be located where it will interfere with or hamper the actual kitchen work. Discriminating women prefer to keep the handling of soiled clothes away from the area where food is prepared.

Wherever the laundry is located, it will earn its keep and pay dividends in satisfaction if it includes modern easy to use appliances, if it is arranged for convenience, and if it has pleasing, comfortable surroundings.

A New Range For the Cook

THERE are new ranges in the show windows of electrical stores again. This is good news for cooks—for new cooks who have never had a stove of their own, and for cooks with wedding rings worn thin by time.

It is good news because electricity is a practically perfect fuel for cooking. It is a fuel that doesn't have to be kindled into burning, nor coaxed to stay going after it starts. It can be controlled to give exactly the heat any cooking calls for, a quick hot fire for frying, or low, very low heat for a cheese sauce or eggs. Because it is under accurate control, it is a safe fuel. For the same reason it is an economical fuel. You buy what you need, no more, no less. Because it produces the heat in coils of wire, it is clean heat.

If you are a cook looking for a new range, you will find it helpful to start your shopping in your neighbors' kitchens. Ask them to let you watch them use their ranges. Talk to them about burners, and ovens, and switch controls. If their ranges have special features, ask whether these are used enough to pay for the extra cost. You can learn a good deal about ranges from them.

When you actually start to town to shop for a range, you will do well

Favorite Patterns

Pattern 4929....Your favorite all-purpose frock. Sizes 12, 14, 16, 18, 20, 30, 32, 34, 36, 38, 40, 42, 44. Size 16, 3⅝ yds. 35-in. fabric. 20c.

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15c for the New Spring Pattern Book. Directions for bag-on-belt included.

Send all orders (in coins) to ELECTRICITY ON THE FARM, Pattern Dept., Box 196, 243 W. 17th St., N. Y. 11, N. Y.

HOW MANY OF THESE G-E LAMPS CAN YOU USE

to make farming more profitable for you?

No question about it! Today there are actually dozens of places on your farm where G-E lamps can make your operations more profitable ... make your work easier, too! Here are a few of the many G-E lamps available, with ways they can serve you.

G-E PROJECTOR LAMP

Combines lamp and reflector in one unit, for outdoor use. Handy for yard lighting...to make after dark chores easier, guard against accidents and protect against prowlers. 150-watt projector (spot or flood) **$1.40.**

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Provides germ-killing ultraviolet to reduce spread of air-borne disease. Helps you cut poultry mortality, have healthier, heavier birds. *Must be used in proper equipment.* Lamp only, 30-watt size, **$6.75.**

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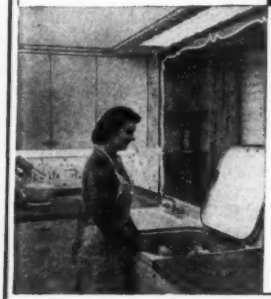
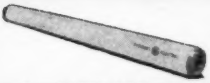
Effective wherever heat is the indicated treatment. Good for your own sore, aching muscles. Keeps baby warm while being dressed ... drys Mom's nail polish faster, too. G-E Heat lamp, **$1.60.**

G-E 150-WATT

Here's a good all-around lamp. In angle reflectors lights the hayloft. In RLM dome reflectors speeds repairs. In the house, try it in floor and table better sight lamps. 150-watt, **20¢.**





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Here's "daylight" for your kitchen made possible with G-E fluorescent lamps. Provides generous, soft, cool light that saves time in preparing food... makes work easier. Popular 40-watt, **95¢.**

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Has many practical uses. Centered in each bay of sheep barn, makes chores go faster. Helps speed work in all farm buildings. Fits many places in the house, too ...100-watt—**15¢.**

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Black & Decker ½" Standard Drills are ideal for repairing equipment or for general construction work. They drive wood augers, hole saws, twist drills, small grinding wheels, wire brushes, etc.—drill holes up to ½" in steel, up to 1" in hardwood.

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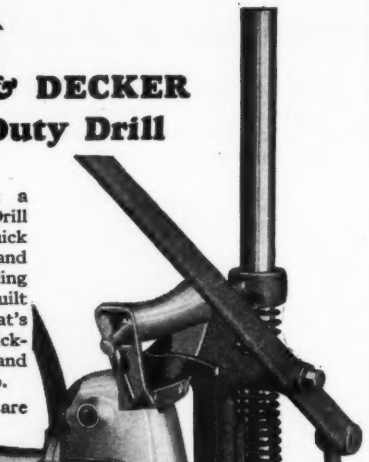

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Complete . . . (as illustrated)	$75.00

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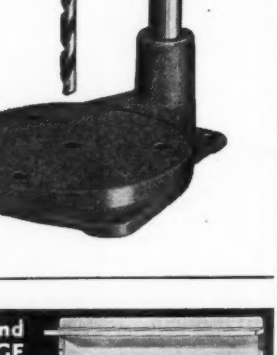

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MALLEABLE IRON RANGE CO. 146 Lake St., Beaver Dam, Wisconsin

to make out a list like this to remind you of the things you want to check in a range you buy.

Construction √
Insulation √
Oven: location √, size √, insulation √, door √
Surface units: open or closed, wiring √, number √, arrangement √, wattage √, number of different heats √
Automatic controls √
Special features √
Manufacturer √
Dealer √
Underwriters Laboratory tested? √

The construction of the range is highly important. A range must be strong and well built to stand years of use.

The oven deserves your careful study. It should be well insulated and the door should fit tightly for good and economical operation. If you bake your own bread, if your family is large, if you have a good deal of company, a large size oven will be important for your satisfaction. Removable guides for the racks to slide on make cleaning the oven easier.

You may have no choice in the matter, but it wouldn't do any harm to ask around to see whether any of the new ranges have ovens high enough to look into without stooping and squatting. Streamlining kitchen work spaces has made beautiful kitchens, but it has driven ovens below deck. Too bad. There are a good many people who would sacrifice a work surface of uniform height for an oven that was high enough to see into without getting down in front of it. For lithe young things who would never notice that they were stooping, the table top range is ideal.

Surface units come next. You will have to decide what type unit you prefer, open or closed wiring. Each has its advantages. Decide on the number and arrangement of these heating units. Compare wattages, and the number of different heats you can get from each burner. Find out how they are cleaned.

Automatic control of the heat is one of the features of cooking electrically that makes cooking success more sure. You can set the thermostat on the oven of an electric range for any baking temperature you want, and be sure that you will have that temperature in your oven throughout the baking time. Most electric ranges—perhaps all of them now in this post war period, have this control as standard equipment.

For many new ranges you can get a clock control that will turn the heat on in the oven, in the deep well cooker, or at the convenience outlet on the range at any time you want, and off again at the time you think the cooking will be done. These clock controls are extras, and you will be wise to weigh the help they might be to you against the extra cost. If you are frequently gone from home when dinner should be under way, if you work outdoors a good deal in the busy season, you may find it convenient to put the dinner in the oven before you leave the house, and turn over to this automatic control the responsibility for turning the switch to heat the oven. It will also turn the heat off again when the cooking is done. It operates the same way for the surface burners. If you would like to have the breakfast food start cooking in the deep well cooker before you get up, or if you would like to have the coffee perking when you go into the kitchen, you may want this control. If you are always up early anyway, such a convenience might be of no value to you whatever. It is a matter for each cook to decide for herself.

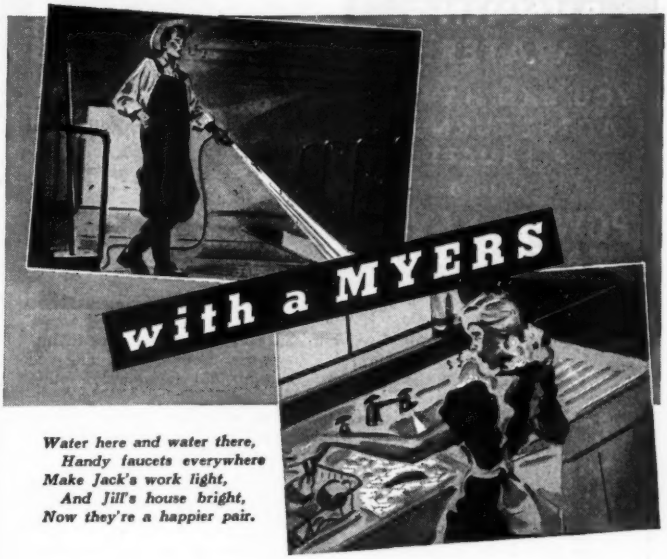
Another extra that pays its way in any kitchen is a little alarm built into the back panel or in one of the clock controls of the range. These alarms will time any cooking for you up to an hour. When you put a jelly roll in the oven, you can set this timer to call you 12 minutes later. No matter what you are doing, you can't forget that cake with the jingle jangle of this minute minder ringing in your ears. It will time your eggs, time the operation of the dishwasher, and remind you when the carrots are done.

Some ranges have deep well cookers for long slow cooking. Some have roasters or griddles built into the top along with the surface units.

After you have seen and studied the ranges themselves, look back at your check list again. You can't see very far into an electric range after all. To be sure of the quality of any range, you need to be sure that it is built by a reliable manufacturer. His reputation is your best guarantee of quality and dependability. Any range is going to need service some day. Infrequently, it is true, but time will bring a demand for a new burner or a new switch. Buying from a reputable dealer, a man you know and trust, will assure you prompt service when you need it.

Then for the last check on your list. If a range is on the approved list of the National Board of Fire Underwriters that means it has been tested and has met their requirements for safety.

BRIGHTER FARMING



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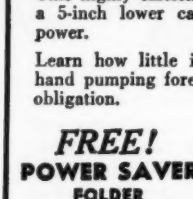

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FFA Boy Praises Electric Brooding

In 1942 my son Jerry secured an electric brooder for use in his FFA poultry project. He brooded 300 New Hampshire Red chicks. The electric consumption was 0.55 kilowatt-hours per chick, and the mortality was only 2.3 per cent.

In his report on his experience with the brooder Jerry had this to say: "The electric brooder that I have used during the past three years, has saved much expense and labor over other methods of brooding. There has never been a time when I had any trouble. One of the finest features of my electric brooder is the freedom from the worry of fire. Three years ago fire burned one of my mother's brooder houses. My entire flock these three years has developed evenly and that means more good pullets go into the laying house in the fall. And I am well pleased with this three years experience.

"My electric brooder is 68 inches in diameter, has a fan and a rated capacity of 500 Leghorn chicks. I place 300 Hampshire Reds in it and they have plenty of room. My brooder house is 12 x 15 feet, double floor, with paper between for insulation. There are two glass windows and a six-inch center stack for ventilation. The walls of the brooder house are matched boards, with a rough board lining.

The space between the outside and inside walls is filled with sawdust. The brooding period started each year first week in April and ran to May 15th."

My son, only 17 years old, says that the Future Farmers of America are destined to make agriculture one of the most satisfactory, attractive and profitable ways of life in the years to come.

C. A. UMOSELLA,
Hammonton, N. J.

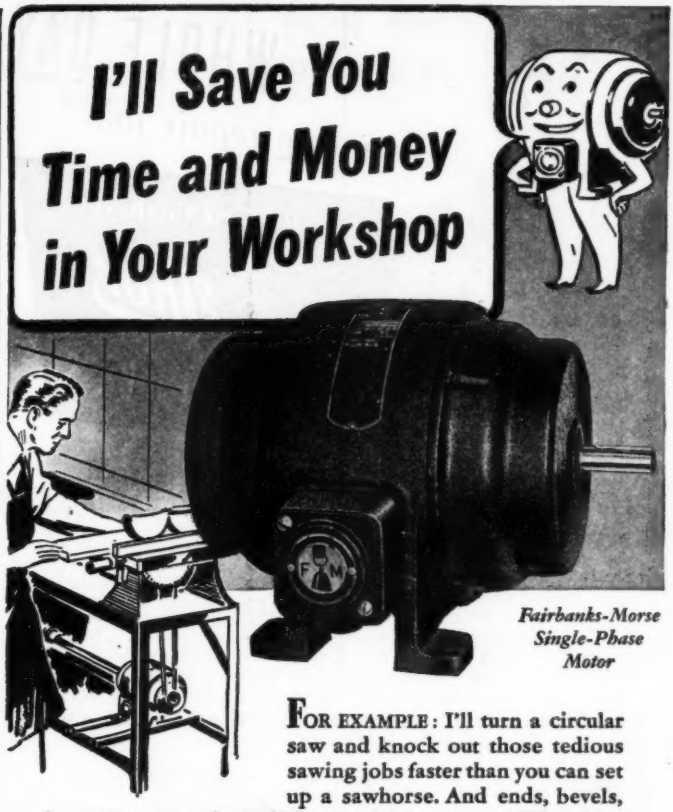
DUFFY'S CAVERN

"THERE'S the guy I'M laying for," muttered the little red hen, as the farmer passed by. . . . Psychologists now report with pride that ANY person can be CURED of snoring—by good advice, co-operation, kindness, and—by stuffing an old sock in his mouth. . . . FIRST CUTIE: "Men are ALL alike." SECOND CUTIE: "Yeah, men are ALL I like, too." . . . NEVER tell a woman you are unworthy of her. Let her find out for herself. . . . Nature IS wonderful! A million years ago she didn't know we were going to wear spectacles, yet look at the way she placed our ears. . . . Isn't THIS the truth? People, like boats, toot loudest when they're in a fog. Along that same line of thinking: "Before you put YOUR tongue into high gear, be SURE YOUR brain is TURNING OVER!". . . . Mose: "How come YOU in jail?" Sam: "Fo' throwin' rocks out of my neighbor's yard into mine." Mose: "Dat don't sound right." Sam: "Dey was PLYMOUTH ROCKS." . . . Jill: "Where have you been for the past seven years?" Bill: "At college taking medicine." Jill: "Gosh! Ain't you well yet?". . . . When you realize the terrific price nylon hose brought in the black market, you KNOW some women MUST be up to their knees in debt. . . . Judge: (looking down at the meek, henpecked little man) "Whatever induced you to hit your wife?" Meek little man: "Well, your Honor, she had her back to me, she was bent over, the frying pan was handy and the back door was open. So—I just took a chance." . . . Many a tourist has wondered what to do about seasickness, and then finally GIVEN UP! . . . WINTER: The season when you keep the house as hot as it was in the SUMMER when you complained about it. . . . The chief difference between the movies and real life is that in the movies they are married at the END of all their difficulties. . . . We heard the other day about an employer who caught one of his clerks napping on the job and remarked sarcastically: "Pardon me, but your SLEEP is SHOWING." . . . Know what one little watch said to the other? "We must ALL TICK together." . . . Seeya next month—DUFFY.

The Twentieth Century Fund says that in 1942 half our farmers received only 12 per cent of all farm money income.

"Manure spread on snow or frozen soil loses some of its value when the snow or soil thaws, but this loss is less than that from the ordinary manure pile."—Cornell Univerity Bulletin E-639.

I'll Save You Time and Money in Your Workshop



Fairbanks-Morse Single-Phase Motor

FOR EXAMPLE: I'll turn a circular saw and knock out those tedious sawing jobs faster than you can set up a sawhorse. And ends, bevels, dovetails, or mortises will be absolutely accurate. When I am not doing that, I'll turn an emery wheel, run other power tools, grind corn, drive an elevator, or do all sorts of similar chores inexpensively.

Fairbanks-Morse Motors will take the time and effort out of dozens of farm tasks at a very low cost. They have a proved reputation for long life and economy of operation.

Whatever the number and variety of such chores, you'll find a Fairbanks-Morse Motor to fit your needs—and you'll find it a profitable investment. Ask your dealer about single-phase or polyphase Fairbanks-Morse Motors; or write Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

Buy More War Bonds

Fairbanks-Morse

A name worth remembering

Water Systems • Sump Pumps • "Z" Engines • Light Plants
Windmills • Pump Jacks • Hammer Mills • Corn Shellers

"I saved a WHOLE DAY on one repair job!"

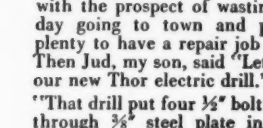
Saved Hard Cash, too with my Thor ELECTRIC TOOLS

"POP!... went the lift arm on my plow our first good plowing day last spring—and there I was faced with the prospect of wasting the day going to town and paying plenty to have a repair job done. Then Jud, my son, said "Let's try our new Thor electric drill."

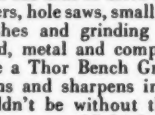
"That drill put four ½" bolt holes through ⅜" steel plate in four minutes flat. In twenty minutes we had the job bolted up tight and back in the field plowing."

"My Thor electric tools have paid for themselves over and over again. I use the drill to drive twist drills, augers, hole saws, small wire wheel brushes and grinding wheels in wood, metal and compositions. I have a Thor Bench Grinder that cleans and sharpens in a jiffy. I wouldn't be without those Thor tools now—and I think any farmer who uses them will say the same."

INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Boulevard, Chicago 6, Illinois



BENCH GRINDER
Smooth running, ⅓ H. P. motor. One 6" dia. grinding wheel and one wire brush.



ELECTRIC DRILL
Light, compact, powerful. Drills up to ½-inch in steel, 1-inch in wood. (Also ¼-inch and larger capacity drills.)

DRILL STAND
A sturdy stand that holds drill for accurate bench work.

Thor PORTABLE POWER TOOLS

TOOLMAKERS SINCE 1893

NEW PORTABLE AIR COMPRESSOR

INFLATES TIRES • GREASES • PAINTS
SPRAYS • CLEANS • DUSTS

Saves time, labor and equipment! Portable—easily carried anywhere. Just plug into electric outlet and it's ready for use—inflating tires, greasing car, tractor or machinery; spraying paint, insecticides, rust preventives; cleaning radiators, motors and machinery. Strong pressed steel welded construction. Moderately priced. A necessity on the modern farm! General Products Div., Tokheim Oil Tank & Pump Co., Fort Wayne 1, Indiana

SEE YOUR IMPLEMENT DEALER OR WRITE FACTORY

Television Coming

By MARIAN THOMAS

TELEVISION, which will open a new world of entertainment and education, will eventually be available to most electrified farms in the United States. Developments in this new industry are taking place rapidly, based on research and radar work accomplished during the war years. Great strides were made in the late thirties, but the war halted the production of new sets and completely stopped the erection of new stations.

At present there are only eight active television stations in the United States. Three of these are in New York City, one in Schenectady, one in Philadelphia, two in Hollywood and one in Chicago. Thus far television programs have been received only in homes within thirty miles of these few big cities. With the war ended, television sets are going to be on the market in 1946 and additional stations will be in operation.

Straight Line Waves

The reason that set owners in a thirty-mile radius of a station are the only ones at present able to receive programs is because television waves travel in straight lines instead of following the curvature of the earth's surface as regular radio waves do. Television waves, at a maximum of thirty-five miles, tend to shoot off into space and are lost.

In order to extend programs over a greater area, two plans for networks have been studied. Special co-axial cables, to be laid underground, with approximately 100 booster stations connecting studios in various cities, is one method planned. Another is for relay towers to be spotted every thirty miles across the country.

Television engineers of the Westinghouse Electric Corporation with aeronautical engineers of the Glenn L. Martin Company have developed a method which may bring television to almost all of the electrified farms in the nation as well as to the cities. The plan is to broadcast television programs from planes six miles up in the stratosphere. Charles Edward Nobles, radar expert for Westinghouse, recently said that a television program could be relayed from Hollywood to New York by the use of eight planes spaced across the country circling slowly over a small area. Six more planes spaced up and down the country would increase coverage to 51 percent of the nation's area and programs would then be avail-

able to 78 percent of the population. Telecasting from six miles up would provide service to an area below of 422 miles diameter, thus reaching farm homes outside of the 30 miles diameter limitation of signals from city stations.

The planes could carry four transmitters, making it possible to broad cast four programs at once. The stratovision system, as it is called, would employ a low-powered ground transmitter to beam the programs to a specially designed high altitude plane circling overhead, from which the programs could be re-broadcast back to earth.

High Quality Milk

. . . . . (Here from page 7)

much cleaning if they got an electric cooling unit and "froze" the bacteria out; but that doesn't work. When bacteria once get in raw milk they stay there. They may not multiply when kept cold, but they don't decrease. We certainly urge a producer to get a water heater first, and then if his conditions indicate, let him get an artificial cooling unit.

We have hundreds of shippers who get very low bacteria milk, who cool by well water alone. Our well water in Minnesota is very cold. We feel that if they can utilize the overflow water from their cooling tank they have no real need for an electric unit, but there are hundreds of farms in our territory that have to waste their cooling water. This water not only makes a mud hole in the barn yard, but costs as much to pump as it costs to operate the compressor on an artificial cooling unit. In this case it certainly would pay a producer to install an electric unit. Well water cooling brings the milk down to 55 degrees or slightly below, it the water is used direct from the well, whereas a refrigerated box will bring milk to below 40 degrees, if desired. Where long hauls and waiting at plants are anticipated, artificial cooling is a safety precaution which cannot be overlooked.

Two tests over a month's time on a meter showed the cost of cooling per 10 gallon can to be slightly less than 2c per can.

We have just touched the high spots in this discussion and it all simmers down to two cardinal points —"clean" and "cold." And from the standpoint of the Electrical Industry, I'd say you have what it takes:

Water heaters to help keep utensils "clean."

Electric cooling tanks to keep the milk "cold."

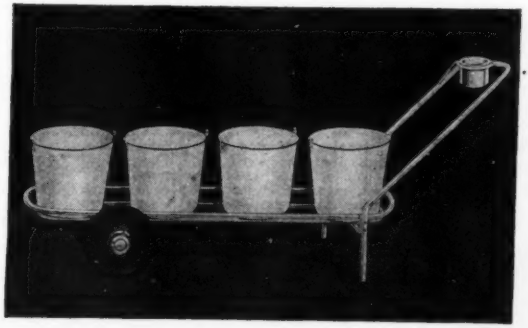
Thomas A. Edison would have been 99 years old on February 11th.

DE LAVAL FOR BEST MILKING

For best . . . fastest . . . and cleanest milking you need the famous De Laval Magnetic Speedway Milker. Magnetically controlled pulsations . . . for absolutely uniform, regular milking speed and action. And for De Laval-quality milking at lower cost . . . there is the great De Laval Sterling Milker.

NEW! DE LAVAL SPEEDWAY MILKING TRUCK

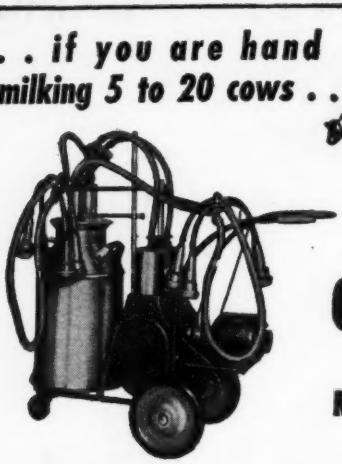
Expertly designed to help the dairyman carry out his fast milking program with the greatest convenience and efficiency. Ruggedly built . . . finished in white enamel . . . equipped with strong, rubber-tired wheels . . . the De Laval Speedway Milking Truck is furnished complete with De Laval Strip Cup and four white enameled pails.

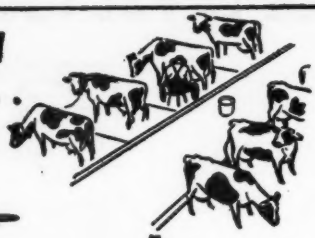


THE DE LAVAL SEPARATOR COMPANY

NEW YORK 165 BROADWAY · CHICAGO 427 RANDOLPH ST · SAN FRANCISCO 61 BEALE ST

. . if you are hand milking 5 to 20 cows . .





A

CHORE BOY

portable

MILKING MACHINE

is the

PROVEN, PRACTICAL ANSWER!

If you want to eliminate chore time drudgery, shorten your milking time and increase the income from your herd, a CHORE BOY PORTABLE is the time proven, practical answer.

Chore Boys are built of the finest materials and require practically no maintenance. Since they are completely portable, you do not have to pay for an elaborate installation. They have no delicate controls or gauges to watch—they are easy to operate and are easy on your herd. They milk directly into milk cans or special pails, and the simplified construction cuts cleaning time 75%. A Chore Boy rinses itself in 2 minutes.

Ask your dealer, or write us for more information on a Chore Boy Portable—the answer to your milking problems.

THE CHORE BOY
DISTRIBUTED BY
DAIRY EQUIPMENT CO.
LANSING, MICH. - MADISON, WIS.
MINNEAPOLIS, MINN. - KANSAS CITY, MO.

CHORE BOY
The World's Finest
MILKERS

CHORE BOY MILKING MACHINE CO., LANSING, MICHIGAN

frost-proof HYDRANT

HANDY WATER for STOCK and FIRE PROTECTION

Galvanized iron top body and standpipe, brass lower body and working parts, lead waste included. Inlet connection for ¾" iron pipe, outlet for ¾" hose coupling. Order sizes to depth of frost where installed. For 3-ft. burial, order 5-ft. size.

$7.50

5 ft. $7.50
6 ft. 8.50
7 ft. 9.50

F.O.B. Phila., Pa.

ELIMINATE WATER HAMMER
IXL AIR CUSHIONED ELIMINATOR
Price $2.50 Plus shipping charges.

If you have a water-hammer condition, install this eliminator before damage is done. Bottom tapped ½" iron pipe size for hot or cold water lines.

Order Through Your Local Plumbing Source or Write Direct for Information

THE I-X-L PUMP & MFG. CO., INC.
959-961 N. 9th Street Philadelphia 23, Pa.

Motor on the Fanning Mill

Cleaning soybean seed for more than a hundred acres of land on the 500-acre farm of Oscar Gardner & Sons of Union Mills, Indiana, is made an easy job by turning the fanning mill with a one-quarter-horsepower motor. The motor is attached to the top of the mill and drives through a one-half-inch V belt. The men in the picture are Paul Wiltfong, Robert Gardner and Dale Lehy. A sack-holder might have saved them one man, and in case of necessity, the whole job could be done by one man.

It is a cleaner job if the mill is set outside where a breeze will help carry away the chaff.

Robert Gardner says they also use the little motor on a number of other jobs.

In attaching a motor to a fanning mill, it is a good plan to test the mill by hand until you find at what speed it does the best work. Then figure out your pulley sizes to give that speed with the driven pulley on one of the faster turning shafts of the mill—not in place of the hand crank.

Ground up corn cobs make good insulating material for buildings if they are kept dry and mice and rats kept out.

In response to a query on what was the poultryman's greatest problem, Cumberland County, N. J. chicken men replied as follows: OPA, 28; disease, 19; labor, 17; feed quality and scarcity, 15; management, 12; outlook, 12; feed price, 9; egg price, 5; stock, 3; mortality, 1; rats, 1; manure disposal, 1.

Questions and Answers

Pasteurization with Rays

▶**Question:** *The city of Pelican Rapids, Minn., is planning at this time to have their milk pasteurized and we have been informed that there is something new coming out in pasteurizing, that milk can be pasteurized by electric rays of some kind. Would you give us all the information that you can gather on this subject?* G. G. W., Minn.

▶**Answer:** Continuous type electric milk pasteurizers have been on the market for about 15 years. They are now being manufactured by the Trumbull Electric Mfg. Company, Plainville, Conn.

Some experimental work has been done on developing electric pasteurizers for small dairies having say, 25 gallons of milk per day or less to pasteurize. None of this equipment has proved satisfactory enough to be placed on the market as yet.

We did tell in our magazine of a new process of using ultra-violet rays for sterilization of milk. Difficulties developed with the process, however, and it has not been put to practical use.

Motor Driven Cistern Pump

▶**Question:** *Would a ¼ hp motor pump water from a cistern into the attic of our house? If so, how can this be rigged up to a pump that has a 4 to 6 inch horizontal stroke.*

Can the piston arm be hooked on a wheel and the belt on the wheel or how? F. D., Wis.

▶**Answer:** A ¼ hp motor would be adequate to pump water from a cistern into the attic of a house.

From the very meager description of your pump it is difficult to tell you how to rig it up for motor drive. If it is a horizontal cylinder without crankshaft or drive wheel, it would be necessary for you to provide a crank and shaft with the drive pulley in order to convert horizontal motion into rotary motion. Not knowing the diameter of the cylinder or its capacity in gallons, I cannot tell you how fast to run the pump and stay within the limits of your ¼ hp motor.

It it is necessary to provide a crank, shaft and pulley, I think it would be more satisfactory and perhaps less costly for you to install

Perfect toast . . .

for years and years!

The new "Toastmaster" toaster gives you perfect toast *every* time—and ALL the time! It gives you what every farm-worthy appliance should provide . . . *dependability.*

The people who make this toaster realize you can't simply step across the road for service. So they build the "Toastmaster" toaster for year-in, year-out performance. It actually toasts bread, just right, before it leaves the factory. It stands up to every test the *inventors* of automatic toasting can devise. It is made of fine, time-tested materials—skillfully assembled by the *only* craftsmen who can draw upon 25 years of toaster-making experience.

When you're ready to buy the new electric toaster you've waited for so long, remember, the best is the cheapest—and the *best* is the "Toastmaster"* toaster!

TOASTMASTER *Automatic Toasters*

*"TOASTMASTER" is a registered trademark of McGraw Electric Company, manufacturers of Buss Electric Fuses, Clark Electric Water Heaters, and Toastmaster Products. Copyright 1946, TOASTMASTER PRODUCTS DIVISION, McGRAW ELECTRIC COMPANY, Elgin, Ill.

Our New **DELCO**

Water System will carry on"

With a Delco Water System on your farm you can say goodbye forever to old-fashioned, back-breaking methods of hand pumping and carrying water. Delco Pumps provide plenty of clean running water under pressure for kitchen, laundry and bath... for poultry, livestock and other uses —all for a few cents a day.

RUNNING WATER EVERYWHERE ON THE FARM

Delco Water Systems are for use wherever electricity is available. There are pumps and tanks in various sizes and capacities for deep and shallow wells. Ask your Delco dealer for information.

GENERAL MOTORS DELCO WATER SYSTEMS

DELCO APPLIANCE DIVISION, General Motors Corp., Rochester 1, N. Y.

a 1" or smaller centrifugal pump having a capacity of 15 or 20 gallons per minute using either a direct connected or a V belt driven pump. You would need a good foot valve on the suction pipe in the cistern in order not to have the pump lose its priming.

Septic Tank Data

▶**Question:** *Could you advise me where to get free bulletins on installing a vitreous clay septic tank myself on my farm?*

Mrs. H. A. S., Pa.

▶**Answer:** Farmers' Bulletin No. 1227 obtainable from the Department of Agriculture, Washington, D. C., is devoted to the subject of sewage and sewerage of farm homes. It contains a plan for making a septic tank from clay tile as well as other plans for farm sewage disposal.

Most septic tanks are made of concrete and if you wish to build one of concrete, I would suggest that you write to the Agricultural Extension Service of your state agricultural college or to the Portland Cement Assoc., 33 W. Grand Ave., Chicago Ill.

Pulley Sizes

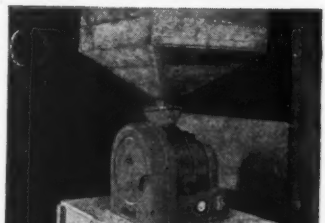
▶**Question:** *I have ¾ hp motor that runs 3450 rpm and expect to use this motor in my shop. I want to change it from one job to another as needed. I wish to use it on an 8 inch rip saw, also on a 7 inch grinding wheel and drill press. Do you think this motor will be powerful enough to run a drill press? What size pulleys do you recommend on my drill press, motor, saw and grinder? Is there a certain size pulley I could use on my motor to handle all three jobs?*

S. B., Pa.

▶**Answer:** Your ¾ hp motor will have ample power for any one of your three tools. The 8" saw should run at about 4300 rpm. The 7" stone at 2700 rpm and the speed of the drill bit should be about 200 rpm for holes up to ¾" in diameter.

If you use a 3" pulley on the motor you should use a 2½" pulley on the saw and a 4" pulley on the grinder. If you equip the motor with with a 2½" pulley you should use a 2" pulley on the saw and a 3" pulley on the grinder.

I cannot tell you the size pulley for your drill press as you should put this pulley on in place of the fly wheel and the size will depend on the gear ratio. If you were to put a pulley on in place of the hand crank, it would have to be about 70" in diameter which is obviously impractical. If you put the pulley in place of the fly wheel, you can get

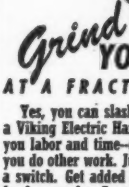


Grind YOUR OWN FEED AT A FRACTION OF THE COST

Yes, you can slash grinding costs when you have a Viking Electric Hammer Mill. And a Viking saves you labor and time—grinds grain automatically while you do other work. Just put grain in the bin and snap a switch. Get added nutritive value of grain ground fresh every day. Average grinding costs 1 cent per 100 pounds. Fully guaranteed. Write for full description and pictures of Viking Mills in actual operation. No obligation. Write today.

Viking

VIKING MANUFACTURING COMPANY
MANHATTAN 2, KANS. JACKSON 2, MICH.



The "Fireball" Kills Weeds! Holds Stock! Safe!

Wisconsin and Oregon Approved

MODERN ELECTRONIC FENCING

Effective shock; kills weeds; low operating cost; automatic weather adjustment; visible indicator tube; ground indicator; absolute safety; maximum reliability.

WRITE TODAY FOR COMPLETE INFORMATION

C. A. McDADE CO.
6526 Hamilton Ave., Pittsburgh 6, Pa.
Specialists in farm electrical equipment for 20 years.

the size of that pulley by counting the number of times the fly wheel goes around while the hand crank turns around once. Divide 70" by this number and you will have the approximate diameter of the pulley needed, when you are using a 2½" pulley on the motor.

Filter for Cistern

▶**Question:** *I am planning on building a filter for my cistern and I would appreciate any information you can send me.* E. H. W., Ohio

▶**Answer:** We have no plans for building a filter for your cistern but I can tell you where to get them.

Farmers bulletin #1448 of the U.S.D.A., Washington, D. C. contains several plans and instructions. The Portland Cement Association of 33 W. Grand Avenue, Chicago, also has a bulletin on making a concrete filter.

What Happens to Freezers When the Power Goes Off

▶**Question:** *We enjoy* ELECTRICITY ON THE FARM. *You often speak of home freezers, but you never say what happens if the electricity goes off for say several days as it sometimes does in a storm. How long will the food keep frozen without electricity?* Mrs. W. H. B., Pa.

▶**Answer:** Your question is one which occurs to all of us who are interested in home freezers.

The length of time products will remain frozen with the current off depends upon how full the box is of foods that are frozen, the outside temperature surrounding the box and the construction and amount of insulation used in the box itself. In a well insulated box in a reasonably cool place and with the box three-quarters full, you would probably have very little spoilage in a period of three days. The box should not be opened and it would help if it were covered with blankets or other insulating material. If you can purchase dry ice to put in the box, you could get along for an almost indefinite period without spoilage of contents.

From present appearances there will be hundreds of thousands of these freezers sold for use on farms in the next few years. Power companies are going to be very cautious about outages and it is probable that dry ice will be available in most places for emergency use.

We have been advocating heavy insulation. In a test made on an empty freezer box having 10 inches of good insulation and cooled down to 11° below zero, the box temperature re-

ESCO

Get bigger milk checks and more profits →

EMPIRE

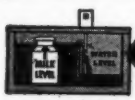
"We have used our EMPIRE for over 20 years and are more than pleased with the way it milks. We think EMPIRE is the greatest time saver of any machine we have."—M. B. Walker & Son (Vt.).

Empire Milker

EMPIRE Milkers in use continuously for 15, 20, even 30 years—a record that proves EMPIRE's leadership. . . . Exclusive features assure normal, comfortable milking. EMPIRE milks uniformly, day in and day out, and quickly pays for itself by milking faster with less help. Write for details. EMPIRE *Milking Machine Company, West Chester, Penna.*

Esco Milk Cooler

6 can cooler *All sizes available*



. . . Even with only one can in place the icy cold water is ABOVE THE MILK LEVEL in the can.

3 cans of night milk. Water is above milk level in all cans . . . milk will be cooled to BELOW 50° IN AN HOUR.

Three morn ng cans added (6 in all). Water level AUTOMATICALLY ADJUSTED. All milk cooled in one hour or less.

Diagrams show the exclusive ESCO "NI-AG-RA" automatic "water-fall" principle of cooling. Icy-bath level maintained up on necks of cans—*above the milk.*

Increase your milk profits with an ESCO, the *original* patented milk cooler. See in the diagrams how the ESCO "NI-AG-RA" keeps an icy water bath up on the necks of all cans. All milk, to the very top, is properly cooled. Automatic. No valves to turn.

Thousands of dairymen testify ESCO is a sure money-maker. Write for details. *ESCO Cabinet Company, West Chester, Penna.*

For "good-and-thrifty" eating the year 'round — an Esco Farm Freezer

ESCO Farm Freezers have *separate freezing compartment and real storage capacity*—big enough to hold most of a year's supply of meat and vegetables. Built to save you time and money—by a company that has specialized in farm refrigeration for almost two decades. Write for Booklet. ESCO *Cabinet Company, West Chester, Penna.*

F&W
WATER SYSTEMS

The performance record shown on the tag which accompanies every F & W pump is your guarantee that the pump has met all the capacity and pressure requirements *by actual test.* The new improved "bullet" model is a compact, close-coupled unit, with fewer moving parts, which assures dependable day-in, day-out service.

Ask your dealer, or write us for information on the complete F & W line of centrifugal and reciprocating pumps for shallow, medium and deep wells.

FLINT & WALLING MFG. CO., INC.
1095 OAK STREET
KENDALLVILLE, INDIANA

mained below freezing for five days and ten hours with the current off. Most freezers have only about half that much insulation, but even this will hold for a considerable period.

Infra-Red Lamps for Hay Drying

▶**Question:** *Could infra-red lamps be used in a tunnel for drying hay and shocks of grain? Would it cost much?* F. N., Pa.

▶**Answer:** Infra-red lamps are used in industry for such heating jobs as baking enamel on cars and refrigerators, but so far as our present information goes, they would not be very practical for removing large amounts of moisture such as would be necessary in the drying of grain or hay. The cost of the installation and the amount of electrical energy required would make it prohibitive.

Lights Dim When Pump Starts. Telephone on Grounded Electric Line

▶**Question:** *We are planning to put in a three-wire service in place of the two-wire service that we now have. The neighbor's electric pump now dims our lights and I was wondering if the situation will be worse if we change. There are three residences besides our farm on the same transformer. Our 115-volt pump which can be reconnected to 230 volts probably dims their lights too.*

When we change to 230 voltage I plan to install a telephone in the barn with one in the house (private line only) and I want to know whether I can use ONE of the many wires that will be there as one wire for the circuit. I think I can use the ground wire that goes to the barn, can't I? The hot wires might hurt someone using the phone—or would they?
D. E. W., New York

▶**Answer:** Motors operating on 230 volts will use only half as much current as when operating on 115 volts. By using the higher voltage you would reduce the tendency to dim lights on your power circuit. If you changed to a three-wire service and do not add any additional load it should improve your voltage condition. It would be a good idea to talk this over with your rural service man from the power company.

Theoretically you should be able to use the grounded wire of your power circuit as one side of your telephone line. Practically I would advise you against it. Your neutral wire runs so close to the live wire in your lighting circuit that in case of a breakdown in insulation or a short circuit you might burn out your tele-

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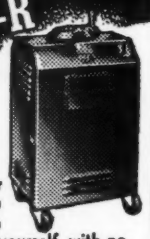

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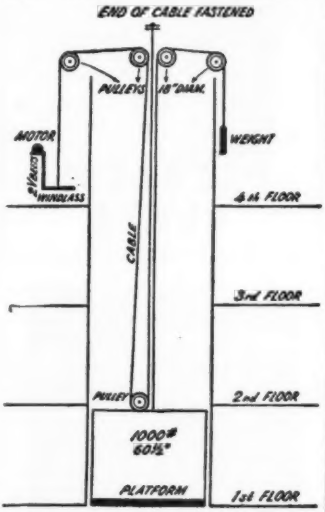
564 Nebraska St. Oshkosh, Wis.

phone system and do injury to persons using it. The extra telephone wire would be good insurance against a noisy telephone as well as the hazards of short circuits.

Elevator for Storage Building

▶ **Question:** *Being a fruit and vegetable grower, I converted a barn into a four-story storage building.*

I would like to build an electric elevator that would have a capacity of about 400 lbs., having a platform about 3 x 4 ft.. I am planning to use a Plymouth automobile transmission and drive-shaft to make the windlass. Plan to use a balance weight so that when the platform is empty it will all but go up itself. What size motor will I need for that size elevator? What size pulleys? Why should the diameter of



the drum be if I use wire cable? Do you think my plans are practical? Are better plans available to build an elevator of this type?

R. E. M., Pa.

▶ **Answer:** I see nothing wrong with your plans for an elevator in your storage building providing your hoist is well made and anchored. You should have an automatic brake on the hoist so that whenever the motor is stopped the brake will hold the elevator.

Answering your questions in order:

1. If your elevator moves upward at the rate of 60 ft. per minute and you do not introduce too much friction in pulleys and slides, a 2 hp motor of the repulsion induction type will be sufficient.

2. With standard ⅜-in. steel hoisting cable your pulleys and drum should be 18 inches in diameter. If

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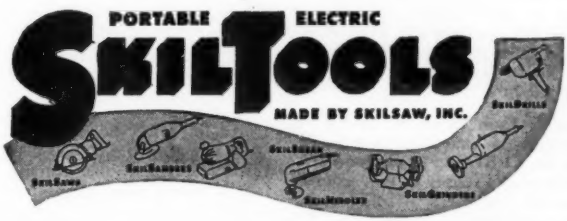

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by longer winter laying days, thru controlled lighting. Paragon Poultry Time Switches assure absolute regularity — are dependable—long life—easy to install and adjust. Models for any system of lighting—evening models provide dim roosting time. Powered by self-starting, synchronous motor. Satisfaction guaranteed.
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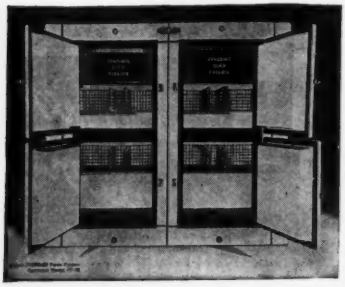
The Great Name in Reach-In Freezer Design



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These years of trouble-free service are your guarantee that the new Wilson ZEROSAFE Farm Freezers will continue to provide adequate capacities to make frozen fresh foods a part of daily living . . . bringing new health and vitality, new enjoyment of food, and new leisure gained from hours formerly spent in the kitchen. . . .

Models from 15 cu. ft. to 120 cu. ft. provide the exact size your family needs to ZEROSAFE all food . . . a whole year's supply of foods, quick-frozen at the peak of flavor and goodness, READY FOR EVERY MEAL.

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you use extra flexible hoisting cable, 1 foot in diameter would do. The size of drum and sheaves depends on the diameter and construction of the cable.

If you care to invest in an electric chain block, you could do away with the hoist and pulleys; the electric block would hang at the top of your building and the chain would attach to the elevator. The electric block contains automatic brakes and safety stops and a reversing mechanism for going up or down. It is controlled by two ropes, one for elevating and one for lowering. A 1 hp hoist will lift 1,000 pounds at 34 feet per minute.

Shop Equipment and Speeds

▶ **Question:** *We have a post drill and grindstone with 8-in stones and expect to get a bench saw. We have a lineshaft and would like to run these machines with one motor. Would a ½-hp motor be large enough? How fast should each machine run and what size pulleys should we use?* I. W., Ill.

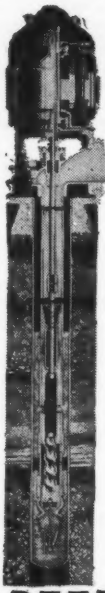
▶ **Answer:** Unless you have some very good reason for using a lineshaft in your shop, I would recommend that you put a handle on your motor and shift it from one job to another. Here are the reasons: You will not have much power to spare if you use a ½-hp motor on a table saw. Any lineshafting or belting you introduce will use up some of your power. Furthermore, the ½ hp will not operate more than one machine at a time. The cost of shafting and belting will be much more than if you move the motor.

A bench saw should run at a speed such that the teeth will travel about 10,000 feet per minute. For an 8" saw this means about 4,600 rpm and for a 10" saw, 3,900 rpm. The speed of the post drill will depend upon the size pulley and the gearing. Normally you would turn it by hand at about 60 rpm. Since the flywheel or belt wheel will travel much faster than this, you will have to figure that speed from your gear ratios on the post drill.

The surface speed of a grindstone should be between 4,000 and 5,000 feet per minute. For an 8" stone this would mean a speed of 1,900 to 2,400 rpm.

If you use a 6" pulley on your motor you will need about a 2½" pulley on your bench saw and a 4½" pulley on your emery wheel.

Manufacture of the electric range was made possible by the discovery in 1907 that nickel-chromium wire would withstand temperatures up to 2,000 degrees F. without disintegrating.



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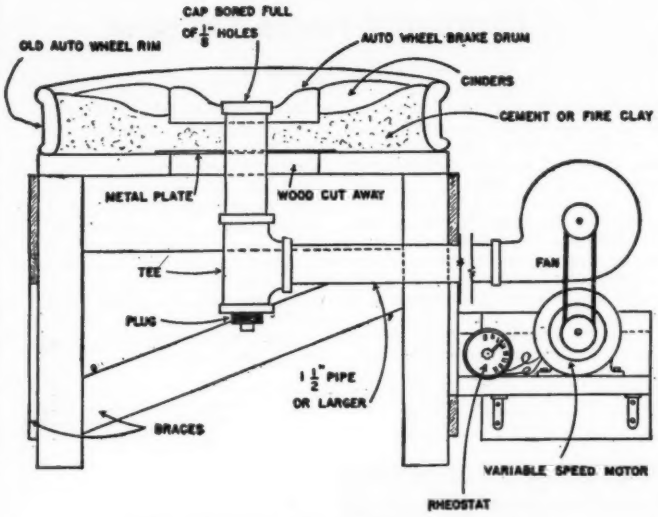


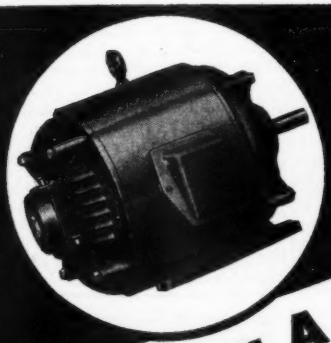
Homemade Farm Forge

This forge, using a small motor driven blower, was adopted from a North Dakota bulletin by R. N. Miller, Extension Agricultural Engineer, Washington State College, Pullman, Wash. The firebox is an auto wheel brake drum set in concrete inside an old auto wheel rim. The rim with concrete and pipe fittings in place is supported on a wood framework as shown in the sketch. For the concrete use a one to two cement and clean sand mixture with just enough water for the surface to look moist when well tamped. Let it cure ten days before using. The air blast may be varied by a variable speed motor or with a cut-off in the blower discharge.

Cheese Aged in 3-4 Months

Methods discovered by research workers in the Bureau of Dairy Industry of the U. S. Department of Agriculture cuts the time of producing "aged cheese" of excellent flavor and quality to about 3 or 4 months, instead of the 6 to 8 months previously needed. In the new process, cheese is held at a higher temperature, and made from excellent quality, pasteurized milk.

A rotary knife for cutting seed potato pieces has been developed at Michigan State College. The bottom half of the knife runs in a sterilizing bath of boiling water, and is thus kept clean to prevent the spread of ring rot, a bacterial disease of potatoes that is spread by the knife in cutting seed pieces. The knife is electrically operated and can be built for about $25.



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List the jobs on which Century motors can save time and manpower for you. Then, look into the possibility of using Century motor driven equipment to do the job.

The Century line also includes capacitor start, single phase, 3-phase, and direct current motors built in sizes 1/20 to 600 horsepower.

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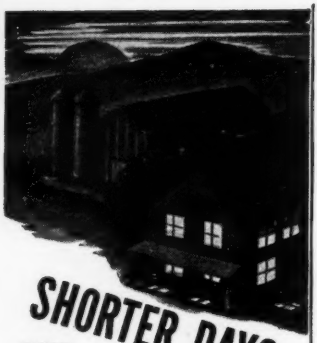

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DURO
PUMPS AND
WATER SYSTEMS

Improving Home Lighting

By JULIA W. WOLFE

IF you will do away with the things that absorb light, and use what is needed under proper conditions, your house will be better lighted, and your bills will be less.

It is not uncommon to find some member of the family always trying to economize by turning down or turning off lights. It is rare for householders to pay any attention to the costly errors they make that waste light.

Absorption lurks in dark places. Even a flood of sunlight cannot properly illuminate a room if most of the light rays are absorbed by the furniture and furnishings.

A room cannot be well lighted if the paint and paper absorb most of the light. A white wall reflects more than 70 per cent of the light available; a dark brown wall, so common in many homes, reflects only 13 per cent. To illuminate a room finished in dark brown requires therefore, several times the illumination necessary to light the same room when finished in white. The following table shows the percentages of light reflected by wall-coverings of various colors:

	Percent
White paper or paint	70
Plain buff (clean)	45
Yellow paper	45
Emerald green paper	18
Dark brown paper	13
Cobalt blue paper	12

Dark wood trimmings absorb light. Chintzes, burlaps, and all kinds of wall-papers also absorb light. Wallpapers with dark flowers and figures are wasteful of light. In selecting papers, choose light tints and shades. Rooms that face the north and the east, especially, need lighter tints than those that face the south and the west.

Save Your Eye Sight

It would seem, then, that the most efficient lighting would be supplied by clear bulbs behind plain glass globes in a room finished in pure white or neutral. But such a room would fatigue the eyes. It is more important to save the sight than to save the cost of illumination.

Avoid illuminants that have red or violet-rays.

Avoid flickering lights, for the iris is unable to keep pace with violent fluctuations and soon tires.

Lamps should not be placed so that the light is reflected from glazed or highly polished surfaces. The glare

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produced is trying to the eyes. Neither should lamps be placed so that the direct rays from the filament strike the eye. If a bright light is in direct vision, a picture of it is formed on the retina that blots out the picture of the surrounding objects. This is the reason that we cannot see beyond a bright light, although there may be considerable light falling on the objects in the background.

Variety of New Shades

Shades can now be had that diffuse light uniformly through the room, that throw the light evenly over a given space, or that focus it on a desk, a table or a reading-chair.

Persons who try to read with a 40-watt light suspended above their heads should know that much of the light is uselessly diffused around the room. The use of the modern reflector would throw the light down on the book or paper, instead of allowing it to be wasted.

A good lamp should not be surrounded with a light-killing shade. Neither should you expect to get full benefit from a dirty globe or shade. Soot and dust, though hardly perceptible to the eye, will reduce the efficiency of any lamp. Fixtures and bulbs should be cleaned at least once a month.

A Locomotive's Eye View

At least one railroad is reported planning to install television cameras on the front of its locomotives. A view of "country ahead," heretofore enjoyed only by the man at the throttle, would be piped to passengers in lounges and dining cars.

For a Safe Home

The National Safety Council has just issued a set of standards for elimination of hazards from homes when remodeling or building new homes. This becomes important when one considers that there are "more than 30,000 Americans killed annually and 4,000,000 are hurt, crippled or disabled in home accidents."

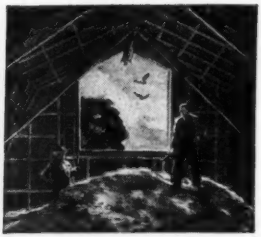
The standards cover land and land improvement, entrances and exits, structural details, interior planning, storage, electrical equipment, plumbing, heating, fire protection, electricity, gas and planning for convenience. Single copies will be sent free on rquest to the Home Division, National Safety Council, 20 N. Wacker Drive, Chicago 6, Ill.

A new electronic device now under test can dry 2,000 bottles of penicillin in an hour—enough for one treatment each for 10,000 persons.

Man: "They tell me Jones has a right good voice. Is he cultivating it?"

Friend: "I can't say about the cultivating but I know he irrigates it frequently."

1. Four or five hours of field-drying, then hoist your hay into mechanically ventilated mow.



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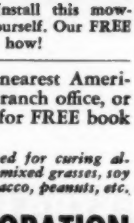

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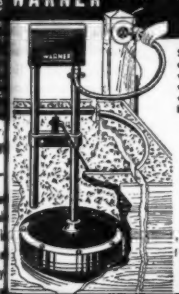

Save Feed & Labor! Water is cheap. Milk is about 88% water; beef 60%. In the winter, keep 'em drinking warmed water and YOU KEEP 'EM PAYING.

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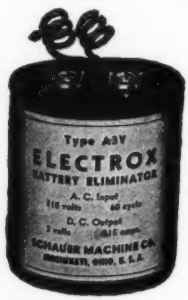
What's New

Electrox Battery Eliminator

Connect this device to ordinary 110 volt 60 cycle lighting circuit and it will deliver a noiseless DC output



of 150 milliamperes at 3 volts. Consists of a transformer, choke, condenser and rectifying unit in can 3 in. high and 2½ in. in diameter. Schauer Machine Co., 2033 Reading Road, Cincinnati 2, Ohio.

Ultraviolet Milk Can Sterilizer

The illustration shows the use of Westinghouse sterilamps in a special holder for use in milk cans. The

lamp which uses less than 25 watts is claimed to reduce the bacterial count in washed milk cans 96 per cent in one minute.

Home Heaters

The Westinghouse Electric Corporation has just announced its entry into the electric house heating field.

BEAT "OLD MAN WEATHER"

Start planning for your hay curing system now. The number of motors obtainable will be limited again this year.

Place order early to make sure of your installation.

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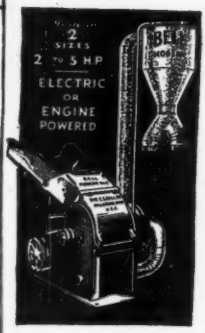
Bruno Adjustable Ho Cutter for home users, mechani farmers, technicians! High speed st blade cuts clean holes quickly. Fits dr press, portable drill or hand bra Money back guarantee! At all hardwa stores or write direct, Dept. EF-2

Model No.	Shank Size	Cutter Expansion Capacity	Use Ma
100	⅛" straight shank	⅜"-1⅜"	$2.
100-B	Square Bit Stock	⅜"-1⅜"	$2.
101	⅜" straight shank	1"-2½"	$4.
101-B	Square Bit Stock	1"-2½"	$4.

BRUNO TOOLS Beverly Hills California



Cut your Feeding Costs up to 40%. Grind your own Wheat, Oats, Barley, shelled and Ear Corn. Bell's "MODERN" Hammer Mill requires the minimum amount of labor for efficient production. Send for illustrated book on "Feed Grinding for Profit". It's free. Write today.

THE C. S. BELL COMPANY
Mfrs.
Hammer Mills, Corn Shellers and Feed Mixers
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ESS BATTERY CHARGER

Operates off 115 volts, 50 or 60 cycles. Keeps your car, tractor and electric fence 6 volt storage batteries fully charged. Not necessary to remove battery while charging. Max. charging rate 5 amperes, automatically tapering to a safe charging rate of 2 amperes. *Write, wire or phone for complete information.*

Electric Service Systems Inc.
641 Cleveland St. N.E., Minneapolis 13, Minn.

AWARDS and HONORS for FARMERS!

$37,500, with individual awards up to $3,000, will be given to farmers writing about maintenance of farm equipment! Besides 262 cash awards, 30 winners will be honored with college scholarships in their names! Get full details from
Dept. EF, The James F. Lincoln Arc Welding Foundation
Cleveland 1 . Ohio

SEND FOR FREE CATALOG describing Automatic Brooder Heaters of many sizes, Electrical Poultry Supplies. **DEBEAKERS** to stop cannibalism. Time Switches. Heating and thermostatic equipment backed by 31 years of specialization.

LYON RURAL ELECTRIC CO.
Dept. EF, San Diego 12, Calif.

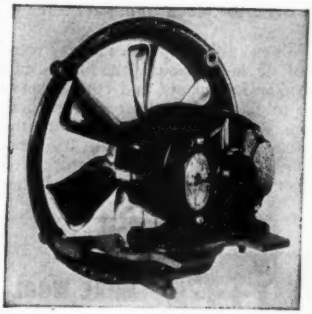
SMALLEY HATCHET MILL No. 5

Grinds and chops feed or roughage faster than hammer mill. Twin slicer knives, plus hammers. Takes less power. Safe pneumatic feed. WRITE — SMALLEY MFG. CO. 535 York St. Manitowoc, Wisconsin

It has been licensed by the Wessix Electric Heater Co. to build Wessix type room and house heaters in units of 1250 to 4000 watts. A new factory in Emeryville, Cal., will make the heaters.

Poultry House Ventilation Fan

The Aerovent Fan Co., Agricultural Division, P. O. Box 636, Lansing 3, Mich. has just announced



a 9" non-overloading fan with totally enclosed, ball-bearing motor especially designed for poultry house ventilation. The fan has capacities of from 200 to 600 cfm at pressures of .05 to .2 inches pressure. It retails for $34.50.

Movie—"Sightseeing at Home"

This 16mm sound movie of 1½ reels taking 15 minutes is available free from the YMCA Motion Picture Bureau, 347 Madison Ave., New York 17, N. Y. It shows the technique of taking and sending out a television broadcast giving details of the actual taking and also of the technical equipment for broadcasting.

Movie—"Music in the Sky"

Produced in Hollywood, this 16 minute sound motion picture stars John Charles Thomas and John Nesbit with Victor Young and the orchestra in an educational story of the inside workings of putting the Westinghouse network musical show on the air. Loaned free by Westinghouse Electric Corp., Motion Picture and Speaker's Bureau, Box 1017, Pittsburgh 30, Pa.

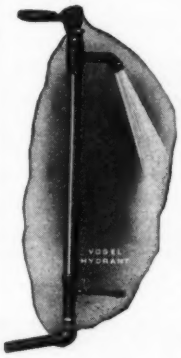
Father—"Johnny, don't you know it's wrong for boys to fight?"

Johnny—"Yes, dad, I know, but Billy doesn't and I'm proving it to him."

Chicago Phoenix.

SUMMER or WINTER A VOGEL (PATENTED) FROST-PROOF HYDRANT NEVER FAILS

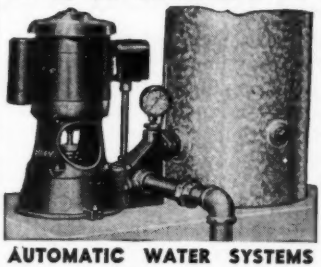
Reduce fire hazard . . . Improve live stock health . . . Increase operating efficiency with Vogel Frost-Proof Hydrants. More than 100,000 in use.



See your nearest Plumbing supply house or write us direct for complete information.

JOSEPH A. VOGEL COMPANY
Wilmington 99, Delaware

BERKELEY



AUTOMATIC WATER SYSTEMS

Shown above is the popular Model VS-50 Shallow Well Stay Prime Water System. EASILY INSTALLED—because two suction openings are provided in different positions. Either may be used to suit the installation.

SIMPLE IN DESIGN—because there are no complicated parts. Model VS-50 is a centrifugal pump with built-in removable jet. The impeller is the only moving part. CHEAP TO OPERATE—because the impeller is smoothly machined and carefully balanced for highest efficiency. Silence and freedom from vibration mean a long and trouble-free life. AND IT STAYS PRIMED.

A wide variety of centrifugal pumps are now available for farm, home and industry. Ask for information and literature.

BERKELEY PUMP COMPANY
819 BANCROFT, BERKELEY, CALIF.
556 TIFT, S.W., ATLANTA, GA.

Insulator Shooting Kills Chicks

A SHOT cracked an insulator atop a pole in Alabama. The next time it rained, the power failed. One farmer lost 7,000 eggs when the electric current stopped and his incubator chilled; another lost 2,500. Quite an expensive bit of shooting.

And the crew of the Co-op whose lines were damaged drove for 40 hours in the rain trying to find the broken insulator. There was no way to estimate the inconveniences suffered by the members or the loss of goodwill to the Co-op.

Fifty-nine members were without power for two hours, and twenty-nine for seven hours, in Illinois. The cause? A shattered insulator again. The weary line crew found two shotgun shells at the base of the pole. That little prank set the Co-op back $30 in linemen's time, truck mileage and materials.

Farmers had to milk in the dark, in Minnesota one night, while their Co-op crew repaired conductors which had wrapped together after an insulator had been broken. It took four hours to restore service.

Creates Much Inconvenience

When pole top insulators were shot at in Missouri, the oil circuit breaker locked out and cut off service to 120 farms. It took five extra trips to reset the breaker before the damaged insulator was found. Shattering of these insulators and other suspension insulators elsewhere on the line cost the Co-op about $950 in time and revenue lost. The crew worked in temperatures down to eight degrees to repair the damage.

So it goes, in state after state. Power line equipment, silhouetted neatly atop poles, tempts thoughtless marksmen—and farm people and their power suppliers suffer untold and in many cases uncountable losses. Some systems escape the plague entirely; others have been able to remedy or minimize it by cooperation with local authorities in educating youngsters and older persons in their responsibility to their neighbors, or in posting and enforcing stiff fines for damage to power lines.

There is real evidence that educators, especially teachers in close daily touch with young owners of firearms, have realized how helpful they can be in any community or Co-op campaign to combat insulator-shooting. Instructors can point out to you people the loss of convenience and comfort that comes from the loss of power; the danger to lives of falling wire. They can balance these losses against the momentary pleasure of hitting a target.

Uncertainty as to Punishment

A few REA-financed systems believe that a policy of silence works best—that attention should not be drawn to the value of an insulator as a target by warnings against shooting them. But most systems believe that the only solution to this sabotaging practice is an attack against it on all fronts, climaxed with a penalty that really hits the miscreant hard.

One co-op combated a rash of outrages and angry complaints from members in this way; a letter was sent to each member explaining the cause of the outage and how he could help to prevent further trouble by seeking the marksman who had fired the shots, and by warning against other such occurrences. Also, the Co-op posted signs offering a $25 reward for information leading to the arrest and conviction of any one damaging or interfering with operation of the Co-op equipment. The sheriff was asked to investigate the shootings. This combination of preventive measures almost entirely eliminated the trouble.—REA News.

Recipe from the National Safety Council for avoiding falls on icy walks or steps: Take a liberal quantity of sand, gravel of fine cinders, add coarse or rock salt and mix. Garnish all icy spots generously with the preparation.

SHEAR YOUR SHEEP *with* **STEWART** *famous* **SHEARMASTER**

MORE WOOL
MORE PROFITS
LESS LABOR

GET 10% MORE WOOL

Removes fleece from sheep in a few minutes. No second cuts. Long fibre wool grades better—brings more money. Saves time and work. Powerful motor is right inside the special EASY GRIP handle. Professional type Tension Control. Rugged, built-in durability.

Ideal for the farm flock, tagging, shearing wool-blind sheep.

Shearmaster, complete with 2 combs and 4 cutters, only $26.95 at your dealer's. Write for new Stewart bulletin, "Harvesting the Farm Flock Wool Crop," and free catalog of Stewart hand-power and electric Clipping and Shearing Machines.

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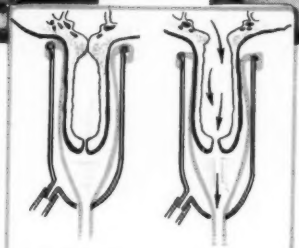
Dept. 30, 5600 W. Roosevelt Road, Chicago 50, Ill.
Over Half a Century Making Quality Products

CAPON "ELECTRIC" DRY CELLS, batteries or light socket do it. No cutting, tearing or twisting of delicate parts. Press button, the rooster becomes a CAPON. Profit and pleasure are yours. Illustrated bulletin explains. A post card with your name and address brings it to you. Without cost or obligation. **George Beuoy, No. 16, Cedar Vale, Kansas**

What Kind of Milker will be worth MOST in 1956?

1. Will it be one such as this that needs some help from you to keep the teat cups from crawling and shutting off the flow?
2. Will it be one such as this that needs some help from you to get the cows milked dry?
3. Will it be one that has a claw and long milk tubes to be cleaned twice a day every day?



When teat cups crawl proper milking stops.

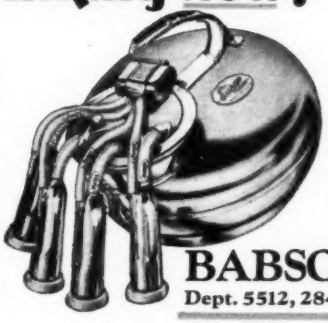
The Surge holds teat cups down so milk flow continues.

4. Will it be one such as this that automatically holds the teat cups down where they belong?
5. One that can easily be adjusted to milk your cows dry with no help from you?
6. Isn't it likely to be one that has no long milk tubes and no claw so that the milk travels only four inches from teat to pail?

Surge... the machine that gives your cows the kind of milking today that other machines may be able to give them some day.

Why not give your cows and your milk check the full benefit of Money Making Milking NOW?

Your Surge Service Dealer Makes Your Surge Milker Worth More Money



Almost any machine you can buy will last you at least ten years. During each one of those ten years it will have a big effect on the size of your milk check.

Mail This Coupon!

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Please send me, without charge or obligation, the full facts about *Money Making Milking.*

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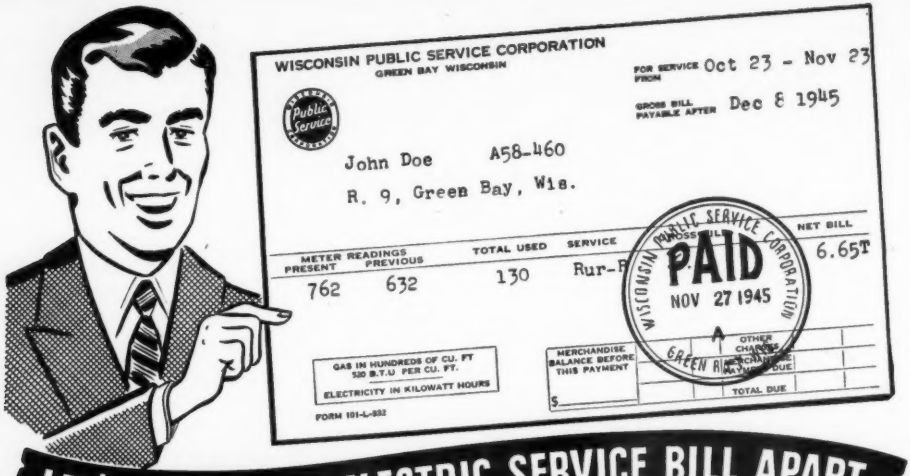
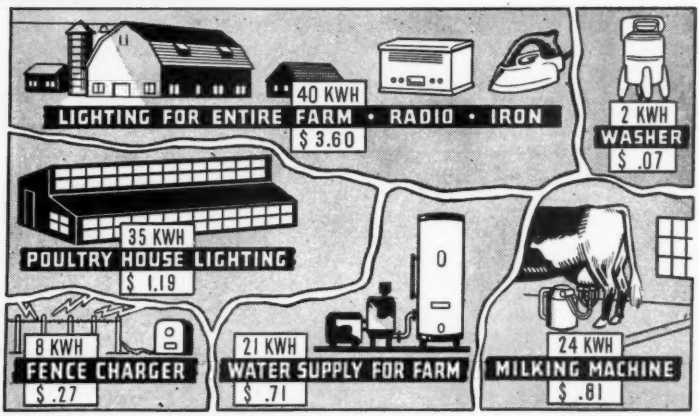


LET'S TAKE YOUR ELECTRIC SERVICE BILL APART



HERE IS AN AVERAGE FARM BILL FOR ONE MONTH'S *Electric Service*

Electricity is an inexpensive helper and a profit producer for the farm. Any additional use of electricity to the above bill would fall in the lowest step of the rate—which is 2½ cents per KWH.

For example, an electric range of the average farm family would use 115 KWH per month figured at 2½ cents or a cost of $2.87; an electric refrigerator's monthly average is 25 KWH and figured at 2½ cents equals 63 cents; a hammer mill grinding two bags of feed a day would use 15 KWH per month and at 2½ cents equals 38 cents.

Use your wired help; it works economically and is always on the job!

WISCONSIN *Public Service* CORPORATION

54—b

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